## Abstract

An infusion device includes a disc-shaped housing that is made from a biocompatible material. The housing contains a reservoir for holding a volume of infusion medium, such as a medication to be administered to the patient. The inlet structure is coupled in flow communication with the reservoir, to allow the reservoir to be filled or re-filled. The housing has an outlet through which the infusion medium may be expelled. Any one or combination of aspects may be employed to minimize or reduce the required thickness T of the inlet structure and of the infusion device, including: the selection of a convergence angle of the cone-shaped depression to be within the range of about 60° and 180° and, preferably about 150°; a septum having one or more sealing ribs or a recess for receiving a support ring, to allow the septum to be made relatively thin without compromising sealing or support functions; a cup member having grooves and indentations formed in its inner surfaces, to improve flow of infusion medium without added structural thickness; a valve member having a relatively shallow needle-receiving depression or having a recess for receiving and sharing thickness with a the spring; and an inlet configuration which accommodates a needle having an opening located near its tip and, thus, employs a relatively short stroke of the valve member between closed and open states of the valve member.

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